throughout the course of the RSA development process to continuously update the list of potential mitigation sites and to evaluate additional mitigation sites as new opportunities may arise.

To date, eighteen potential mitigation sites have been identified throughout the lower Keys, from Key West to Ohio Key. These sites represent approximately 108 acres of potential wetland creation and 5.4 acres of potential wetland enhancement. The potential enhancement areas would result in approximately 5.4 acres of actual creation credit based on an average mitigation enhancement ratio credit of 10:1. In general, these sites could provide flexibility as to the type of mitigation (salt marsh, mangrove, open water) developed. It should be noted that detailed field studies will be required to refine and develop the final mitigation options and the development of detailed mitigation plans.

Potential mitigation options evaluated for the identified sites includes the creation or restoration of wetlands through the removal of old runways, fill material, blimp pads, road fill, dredge spoil, and disturbed uplands. Other options evaluated included the enhancement of existing wetlands by filling dredge holes to a depth suitable for wetland vegetation and the enhancement of existing degraded wetlands through the addition of channels and/or culverts to increase tidal flushing. These scenarios would also include the planting of mitigation sites with wetland vegetation to initiate habitat establishment and the removal of nuisance and exotic species to further enhance desirable biotic communities. Restoration of limerock mines are assumed to be in the form of fill removal along the outer edges of the pit rim to increase the amount of tidally influenced wetland habitat located adjacent to the pits. Restoration and/or enhancement directly inside the pits would be dependent on the quality of water found inside the pits and the availability of suitable fill material.

7.5 Mitigation Cost Estimates

As part of the site evaluation process, approximate land acquisition costs (where applicable) and approximate mitigation construction costs were developed for each site. These costs should be interpreted as a generalized, broad-brush projection of costs that will require closer scrutiny should the RSA project progress to a more refined stage.

Acquisition costs were based on probable land values based on Just Valuation data obtained from the Monroe County Property Appraisers Office in February 2003. These values were adjusted upwards by 30 percent for planning purposes. General assumed costs associated with property acquisition (e.g., appraisals, surveys, legal fees) were added to the land value to generate total probable acquisition costs. The preparation of appraisals during the course of a subsequent land acquisition program will generate detailed estimates of fair market value that may be higher than the Just Valuation values determined by the County Property Appraiser. The estimates of probable land acquisition costs do not include potential additional costs for negotiated settlements or potential eminent domain acquisitions.

Construction costs were projected using unit prices that have applied to similar projects undertaken in the Keys and include allowances for design, permitting, and mobilization. Volumes of material to be excavated were based on assumed existing elevations of 5 feet NGVD for areas that were developed for residential/business uses and 4 feet NGVD for areas that contain fill and spoil with no additional associated development. Because mangrove wetlands comprise the majority of the proposed impact,

mitigation construction cost was calculated (except where noted) assuming that 70 percent to 85 percent of the constructed mitigation would be mangrove wetlands and the remainder would be salt marsh wetlands. Construction and land acquisition cost summaries for each site are found in Table 7.5-1. Information for the cost estimates is also provided in Appendix C.

TABLE 7.5-1
PROBABLE LAND ACQUISITION AND CONSTRUCTION COSTS -POTENTIAL MITIGATION SITES

Site Name	Probable Land Acquisition Cost	Probable Mitigation Construction Cost	Probable Project Cost
1.Creation/Restoration on		CONSTRUCTION COST	combie - rojeci cost
Airport Property	N/A	\$723,300	\$723,300
2.Creation/Restoration on City		47.20,000	Ψ723,300
of Key West Leased and Owned			
Property	N/A	\$1,273,300	\$1,273,300
3. Cow Key Road Removal	\$731,400	\$487,800	\$1,219,200
4. North Boca Chica Restoration	\$701,900	\$3,644,800	\$4,346,700
5. USFWS Key Deer Refuge		, , , , , , , , , , , , , , , , , , , ,	4 1,0 10,100
Road Removal	N/A	\$165,000	\$165,000
6. Sugarloaf Loop Road			
Removal and Limestone Quarry		i	
Restoration	\$1,224,400	\$594,700	\$1,819,100
7. Summerland Key Bridge			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Removal	N/A	\$61,700	\$61,700
8. Cudjoe Key Limestone Mine			75.,,00
Restoration	\$1,090,700	\$708,200	\$1,798,900
9. Cudjoe Key Canal			31,100,000
Restoration	\$74,800	\$123,500	\$198,300
10. Spain Blvd. Culverts and Fill			<u> </u>
Removal	N/A	\$62,100	\$62,100
11. Key Deer Refuge Dredge			
Hole Restoration	N/A	\$86,800	\$86,800
12. Finger Fill Removal	N/A	\$24,600	\$24,600
13. Habitat for Humanity Site	\$143,700	\$491,300	\$635,000
14. Western Big Pine Dredge			
Hole Restoration	N/A	\$283,200	\$283,200
15. Key Deer Refuge Limestone			
Pit	N/A	\$264,900	\$264,900
16. No Name Key Limestone			+
Mine	\$159,300	\$425,800	\$585,100
17. Ohio Key Mangrove			
Restoration	N/A	\$407,800	\$407,800
18. Nature View Property			
Restoration	\$285,300	\$136,100	\$421,400
Totals	\$4,411,500	\$9,964,900	\$14,376,400

Notes:

- (1) Land acquisition and mitigation costs include incidental and associated costs (i.e., design, appraisals, permitting, and surveys). Please refer to Appendix C for detailed information on the cost estimates.
- (2) Land acquisition cost not based on detailed appraisals required for acquisition.
- (3) Project costs do not include long-term maintenance costs borne by the County.

N/A = Not Applicable.

7.6 Potential Mitigation Opportunities

The following is the list of potential mitigation sites and descriptions of mitigation options that might be performed at these sites. It should be noted that acreages and costs assigned to each of these sites are approximate and subject to change.

1. Creation/Restoration on Airport Property

Project Location: The project is located at KWIA (see Figure 7.6-1.)

Proposed Mitigation: Approximately 7 acres of disturbed uplands located on airport property have been identified that could be used for wetland mitigation (see Figure 7.6-2.) This includes 5.4 acres of upland located west of Runway 9 at the abandoned missile bunker site (the bunker dates from the Cold War era) and 1.6 acres of disturbed upland located north of the proposed RSA along the salt ponds. The bunker may be eligible for inclusion to the National Register of Historical Places and coordination with the State Historic Preservation Officer (SHPO) will be required prior to removal of the bunker from the site. These uplands could be scraped down to create a combination of open water, salt marsh, and mangrove wetlands. A minimum of 5 acres of salt pond habitat would be created in this area to keep all salt pond creation areas adjacent to the impact site. A detailed hydrographical study would be required prior to design of this mitigation option.

Project Benefits: Approximately 7 acres of on-site wetland creation/restoration. Site can be configured to maximize salt pond/ mangrove wetland mitigation. Increased circulation within the salt ponds.

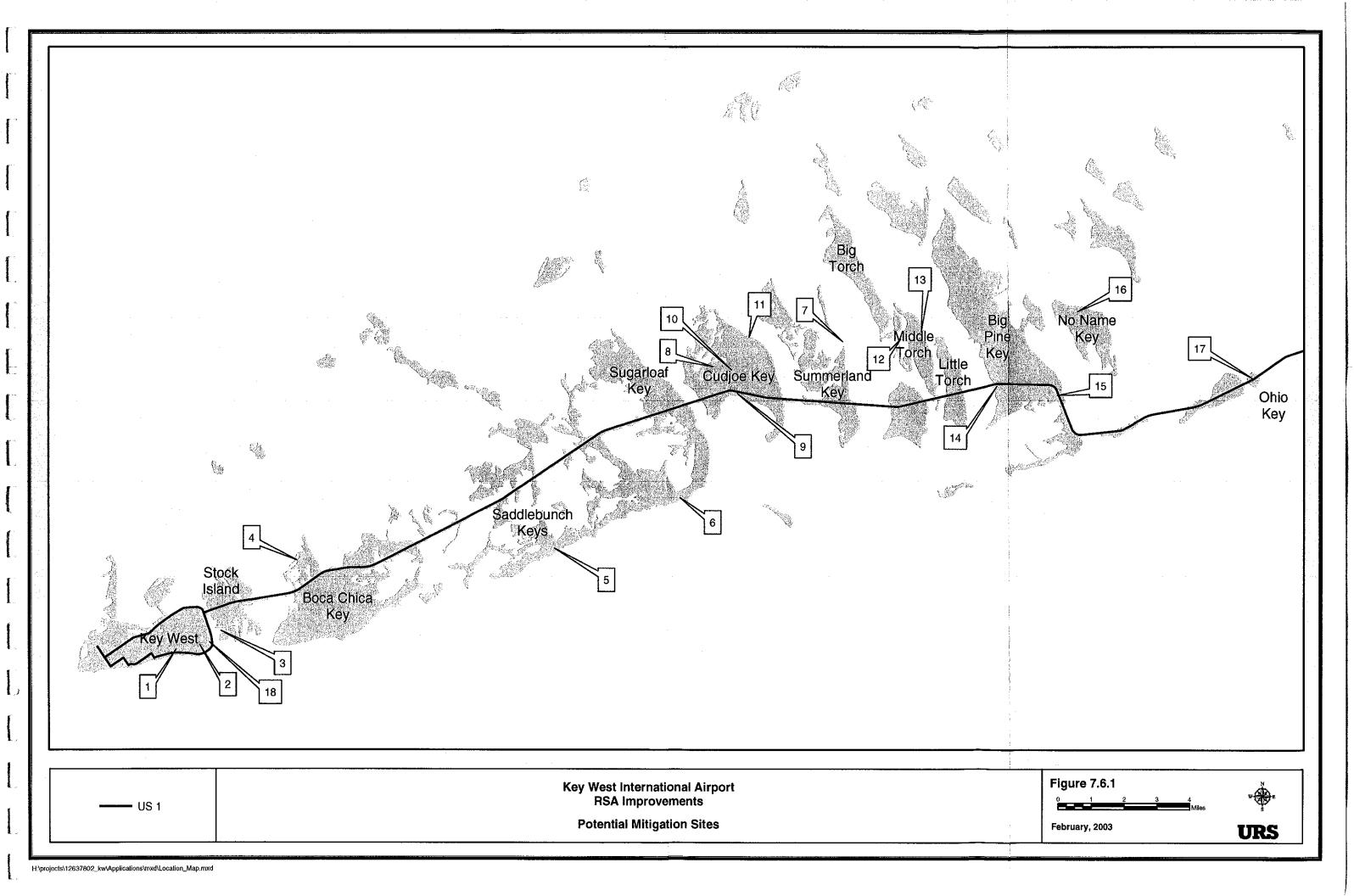
Project Constraints: Coordination with the State Historic Preservation Officer (SHPO) to obtain approval for removing the bunker site. Consideration of impacts to previous mitigation projects performed in the vicinity of this site since those acreages would also have to be mitigated.

Project Costs:

Probable Land Acquisition Cost: N/A

Probable Mitigation Construction Cost: \$723,800

Total Project Cost: \$723,300





2. Creation/Restoration on Property Leased or Owned by the City of Key West

Project Location: A review of property records indicates the City of Key West has a thirty-year lease from the Monroe County Land Authority on 46.5 acres of land north of the airport. Additionally, the City owns an abandoned missile site located north of the airport (see Figure 7.6-1).

Proposed Mitigation: Within the leased property, approximately 11.5 acres of disturbed uplands could be converted/restored to wetlands (see Figure 7.6-3). This includes 5.3 acres that appears to be a former runway and 6.2 acres of area that contains a former blimp pad that is currently being used as a fill stockpile site. A minimum of 5 acres of this mitigation would be designated as salt ponds to maximize on-site salt pond mitigation. Coordination with the City of Key West would be required to utilize this leased area for mitigation purposes.

A former missile site located to the north of the airport and on property owned by the City of Key West could also provide up to 3.6 acres of potential mitigation (see Figure 7.6-3). This area appears to be previously filled wetlands that could be returned to wetland grade as mitigation. The proposed mitigation would remove the fill associated with the outer "ring" and finger fills. Preliminary conversations with the City of Key West Planning Department and the Engineering Department indicate the City desires to keep this land for its own use. In addition, the FAA has several radio antennas currently occupy the site. Additional coordination with the owner would have to be conducted to identify if the designated portions of this site could be used for airport mitigation.

Project Benefits: 15.1 acres of on-site wetland and salt pond creation/restoration. Increases wetland habitat within the salt pond ecosystem.

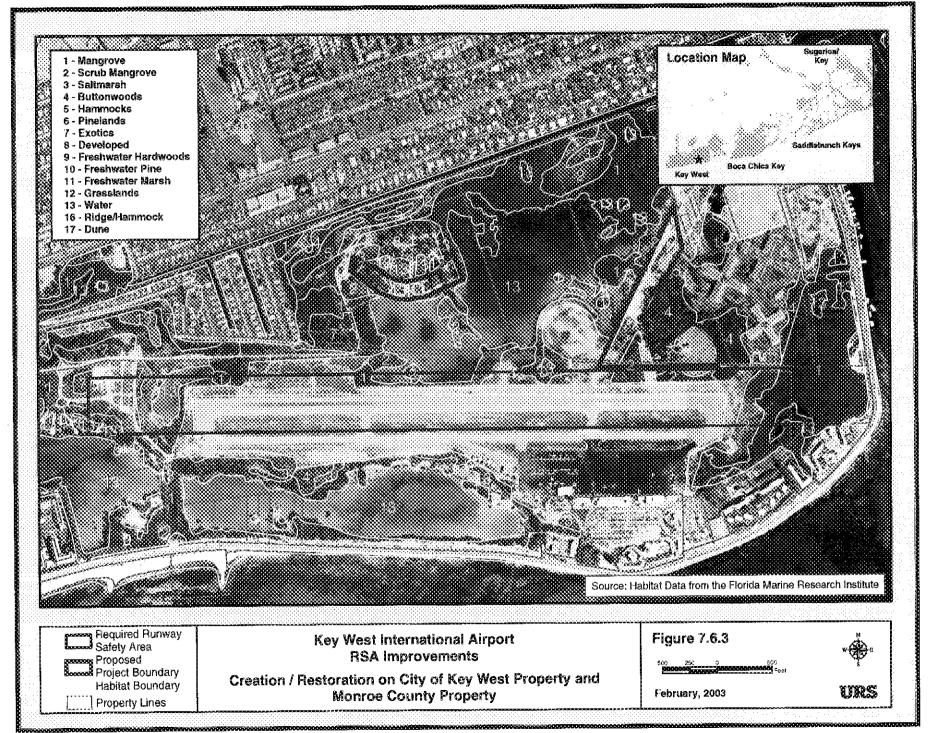
Project Constraints: An agreement with the City of Key West would be required to utilize this area.

Project Cost:

Probable Land Acquisition Cost: N/A

Probable Mitigation Construction Cost: \$1,273,300

Total Project Cost: \$1,273,300



3. Cow Key Road Removal, Stock Island

Project Location: This project is located on Stock Island approximately 2 miles east of KWIA (see Figure 7.6-1).

Proposed Mitigation: A road owned by Monroe County is constructed on a fill peninsula that connects Stock Island to Cow Key. The road continues onto privately owned property on Cow Key and traverses a mangrove wetland. Additionally, just south of Stock Island a finger fill peninsula abuts the road and proceeds west into the Cow Key Channel (see Figure 7.6-4).

This project would consist of the complete removal of the road that connects Stock Island and Cow Key and removal of 600 linear feet of roadway from a mangrove swamp on Cow Key. The project would also include the removal of the 1,800-foot-long finger fill that extends from the road to the west. In addition acquisition of the privately held Cow Key could be used as preservation credit.

Project Benefits: 5.6 acres of restoration of open water/bay habitat and mangrove wetlands. Additionally the road removal would allow flushing of a 3-acre open water area that is currently impounded.

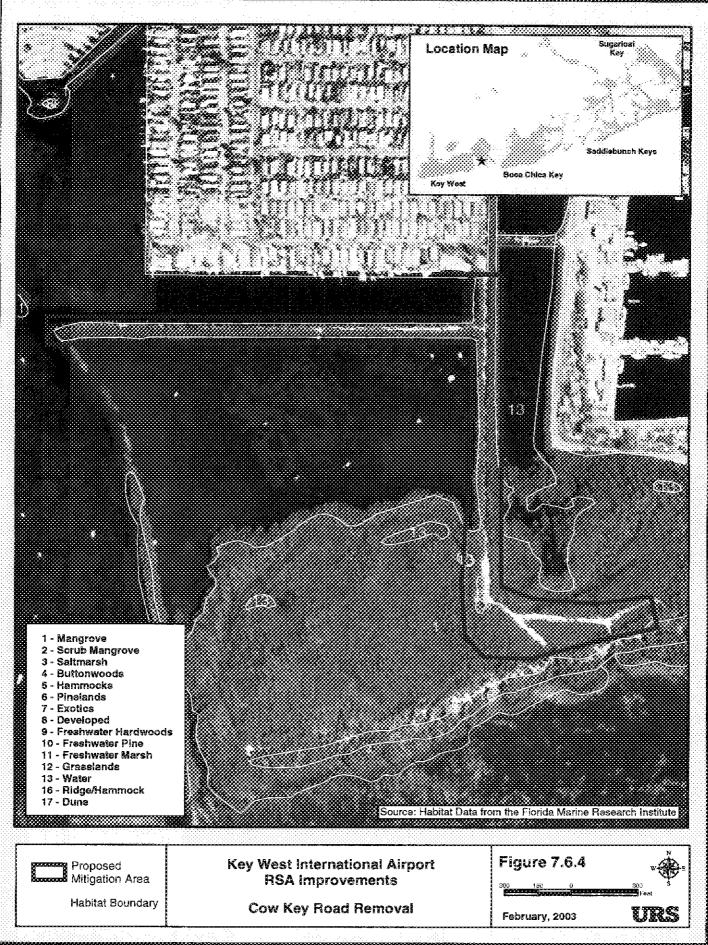
Project Constraints: Area is under private ownership and approximately 38 acres would need to be acquired to resolve property access issues. Removal of the finger fill may be unpopular with waterfront property owners located to the north of the site due to the shelter it provides from south winds.

Project Cost:

Probable Land Acquisition Cost: \$731,400

Probable Mitigation Construction Cost: \$487,800

Total Project Cost: \$1,219,200



4. North Boca Chica Restoration, Boca Chica Key

Project Location: This project is located on a privately owned parcel on the northwest corner of Boca Chica Naval Air Station. The site is located approximately 1 mile north of U.S. 1 at Mile Marker 7 (see Figure 7.6-1).

Proposed Mitigation: The area appears to have been dredged to create finger fills and canals. The fill appears to have been deposited in wetlands to bring the area to grade for residential development. Material from the finger fills could be used to backfill the canals and dredged areas to grades that would support salt marsh/mangrove habitat (see Figure 7.6-5). Additionally, a finger fill jetty could be removed to enhance tidal flushing to the newly restored area. The area is surrounded by U.S. Navy property with access only through Navy controlled gates.

Project Benefits: 40 acres of salt marsh/mangrove swamp restoration

15 acres of open water/dredged bottom enhancement

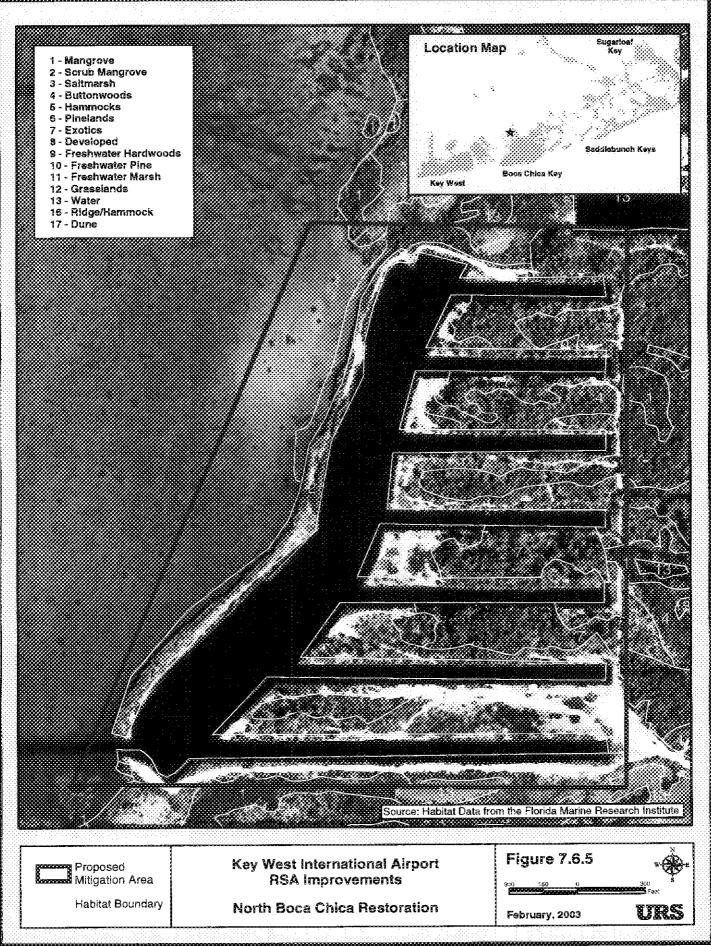
Project Constraints: Area is under private ownership and access is through U.S. Navy property. Coordination with the U.S. Navy and acquisition of property would be required. Discussions with agencies show that previous attempts to acquire this property for mitigation purposed have been unsuccessful.

Project Cost:

Probable Land Acquisition Cost: \$701,900

Probable Mitigation Construction Cost: \$3,644,800

Total Project Cost: \$4,346,700



5. USFWS Key Deer Refuge Road Removal, Sugarloaf Keys

Project Location: This project is located in the lower Sugarloaf Keys along old State Road 4A on property that has been purchased by the Key Deer Refuge and blocked to vehicular traffic. The site is located approximately 2 miles south of U.S. 1 between Mile Markers 14 and 15 (see Figure 7.6-1)

Proposed Mitigation: The project would result in the removal of approximately 1,750 feet of old State Road 4A from mangrove wetlands on property owned by the Key Deer Refuge (see Figure 7.6-6). The Refuge would support this project; however, Refuge staff indicates that a boardwalk would have to be constructed to maintain public access to refuge property to the west since this area is commonly used as a nature trail.

Project Benefits: Approximately 1.5 acres of mangrove swamp restoration and increased flushing in the existing mangrove swamp. The property is under public ownership and would not have to be acquired.

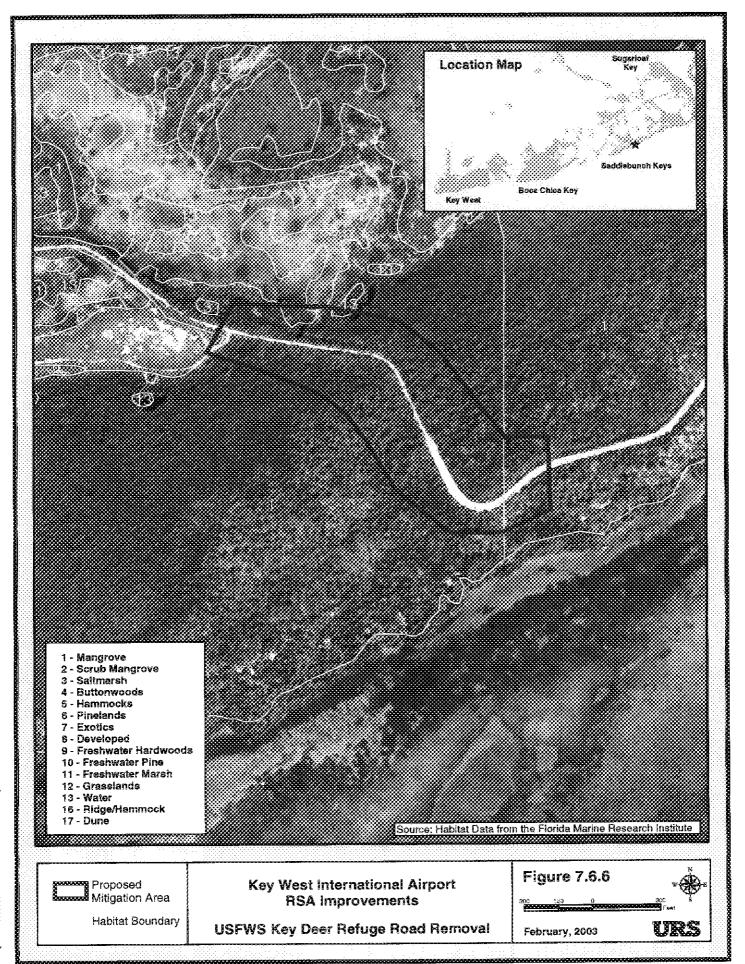
Project Constraints: Construction of a boardwalk.

Project Cost:

Probable Land Acquisition Cost: N/A

Probable Mitigation Construction Cost: \$165,000

Total Project Cost: \$165,000



6. Sugarloaf Loop Road Removal and Limestone Quarry Restoration, Sugarloaf Keys

Project Location: This project is located approximately 1 mile east of the intersection of County Road 939 and 939A on Lower Sugarloaf Key (see Figure 7.6-1).

Proposed Mitigation: The project would remove portions of a privately owned loop road from mangrove wetlands. The road has limited, blocked access due to USFWS refuge property. Approximately 4,650 linear feet of road could be removed from the mangrove swamps. Portions of the loop road located in uplands would be left in place. Additionally, edges of a limerock quarry located adjacent to the road could be scraped down and converted to salt marsh/mangrove wetlands (see Figure 7.6-7).

Project Benefits: Approximately 4.2 acres mangrove swamp restoration from the road removal. Approximately 3.2 acres of salt marsh/mangrove wetland restoration at the limerock quarry. Potential preservation of 204 acres of property through land acquisition associated with the project.

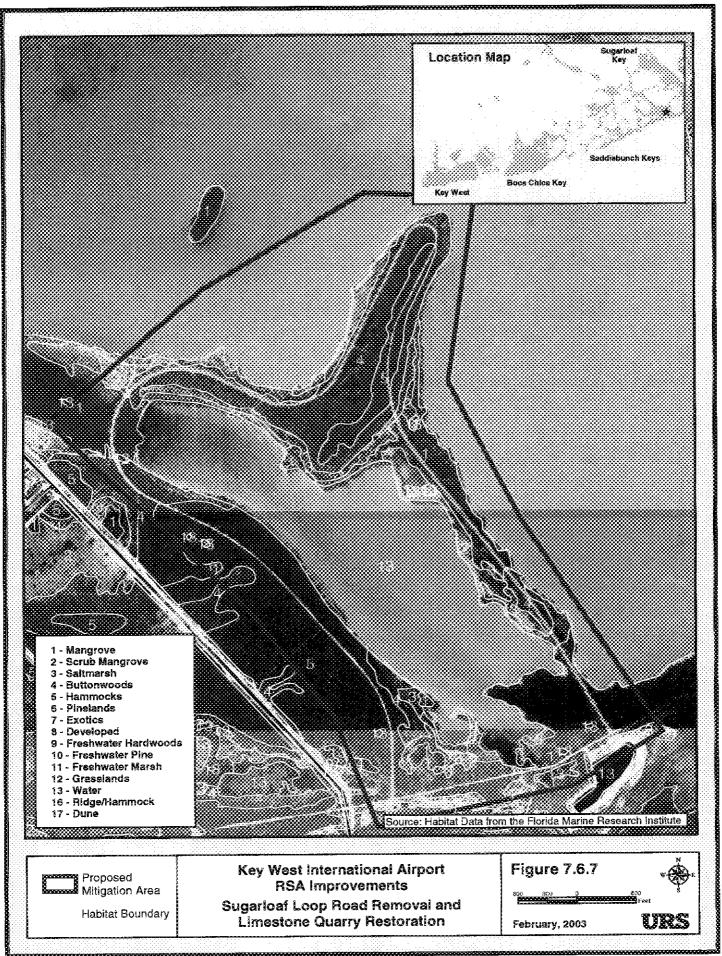
Project Constraints: The site is under private ownership and would need to be acquired. Approximately 204 acres of property might need to be acquired to obtain rights to the road and resolve property access issues.

Project Cost:

Probable Land Acquisition Cost: \$1,224,400

Probable Mitigation Construction Cost: \$594,700

Total Project Cost: \$1,819,100



7. Summerland Key Bridge Removal, Summerland Key

Project Location: This project is located off of Niles Road approximately 2 miles north of U.S. 1 at Mile Marker 25 (see Figure 7.6-1).

Proposed Mitigation: This project would result in the removal of a wooden bridge that connects Summerland Key to Wahoo Key (see Figure 7.6-8). Fill associated with the bridge pads and approaches would also be removed. The property is owned by the USFWS and FFWCC. Key Deer Refuge staff recommended this project.

Project Benefits: Enhancement of 3,100 sq. ft. of bay bottom and removal of 0.08 acres of fill from mangrove wetlands. The site is under public ownership and would not require acquisition.

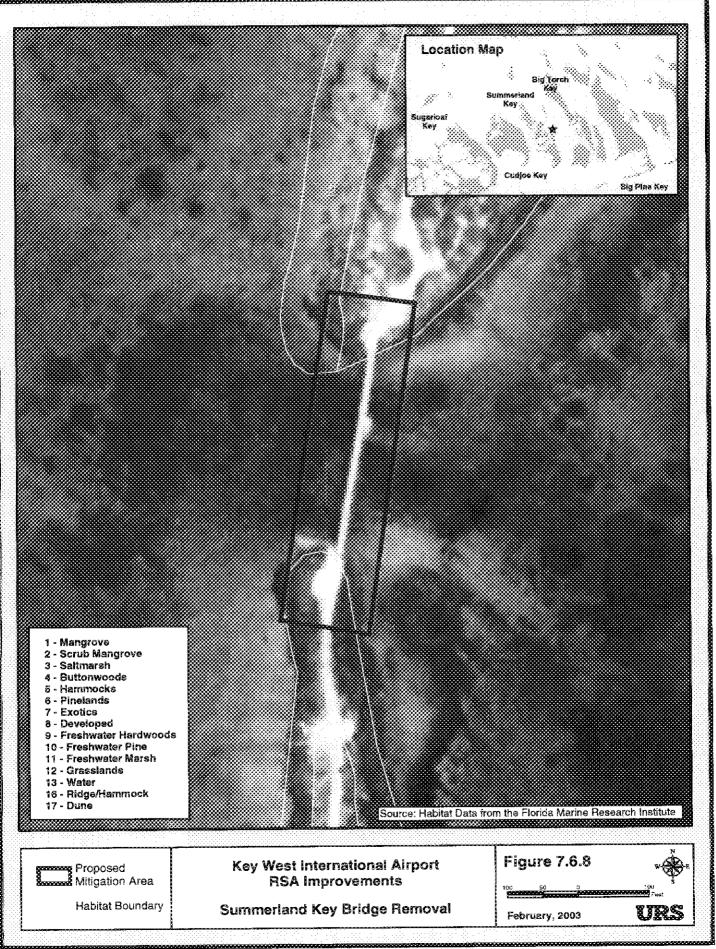
Project Constraints: Access to the site is over a poorly maintained road.

Project Cost.

Probable Land Acquisition Cost: N/A

Probable Mitigation Construction Cost: \$61,700

Total Project Cost: \$61,700



8. Cudjoe Key Limestone Mine Restoration, Cudjoe Key

Project Location: This limerock mine consisting of two adjacent pits is located on Cudjoe Key approximately 1.5 miles north of U.S. 1 on Balloon Road (see Figure 7.6-1).

Proposed Mitigation: The outer edges of the two pits could be restored back to salt marsh/mangrove wetland habitats (see Figure 7.6-9). Wetland creation areas would be along the outer edges of the pits where fill could be removed to create wetland grades. Water quality testing should be performed in the pits to determine the acceptability of opening the pits to tidal flushing. Rock barriers surrounding the pits could be removed to enhance tidal flushing within existing degraded salt/marsh mangrove wetlands that are showing evidence of hypersalinity.

Project Benefits: Approximately 8 acres of salt marsh/mangrove wetland restoration.

Approximately 10 acres of salt marsh/mangrove wetland enhancement.

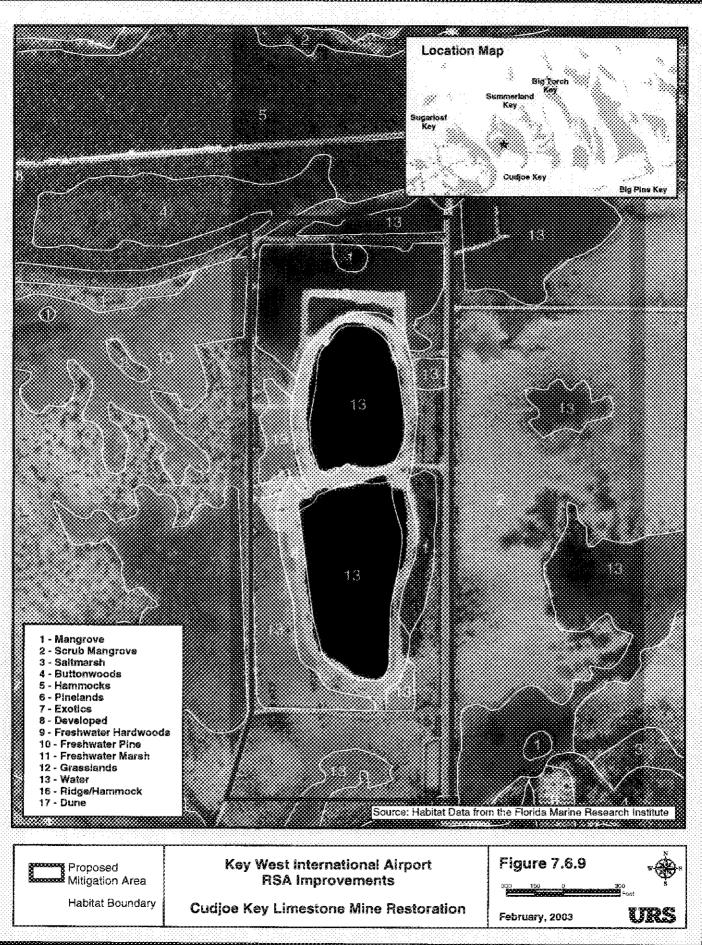
Project Constraints: The site is under private ownership and would have to be acquired.

Project Cost:

Probable Land Acquisition Cost: \$1,090,700

Probable Mitigation Construction Cost: \$708,200

Total Project Cost: \$1,788,900



9. Cudjoe Key Canal Restoration, Cudjoe Key

Project Location: This vacant parcel is located south of U.S. 1 approximately 1 mile east of Balloon Road between Mile Markers 21 and 22 (see Figure 7.6-1).

Proposed Mitigation: A canal located on the property was apparently never opened to the gulf. This canal could be filled and grades brought back to salt marsh/mangrove wetland elevations (see Figure 7.6-10). Additionally, the adjoining fill areas could be scraped down to create a salt marsh/ mangrove wetland.

Project Benefits: Approximately 0.67 acres of salt marsh/mangrove wetland restoration.

Approximately 0.05 acres of wetland enhancement.

Project Constraints: Area is under private ownership and would have to be acquired.

Project Cost:

Probable Land Acquisition Cost: \$74,800.00

Probable Mitigation Construction Cost: \$123,500

Total Project Cost: \$198,300